

IN THE CLAIMS

Pending claims 1-20 stand rejected, claims 1-20 amended herein, claim 20 canceled, and new independent claim 21 added; accordingly, claims 1-19 and 21 are pending for examination on the merits.

1. A computerized method of controlling one or more implantable medical devices deployed in one or more patients, said implantable medical devices having firmware or software, comprising the steps of:

transmitting via a network communication link a set of historical physiologic data previously gathered from at least two implantable medical devices to a centralized computing resource external to a patient;

analyzing the set of historical physiologic data so transmitted according to a suitable physiologic model and generating a set of results of the analysis of the set of historical physiological data;

determining a set of instructions comprising an implantable medical device therapy regimen based at least in part on the set of results of the analysis of the set of historical physiologic data; and

transmitting via the network communication link or a separate network communication link the set of instructions to at least one of the at least two implantable medical devices for execution by the at least one or more implantable medical devices in accordance with a firmware- or a software-implemented executable routine.

2. A method according to claim 1, wherein the network communication link or the separate network communication link comprises a radio frequency link, a hard-wired link, an infrared-band link, or other type of a wireless communication link.

3. A method according to claim 2, wherein the network communication link or the separate network communication link comprises a hybrid link.

4. A method according to claim 3 wherein the hybrid link comprises a radio frequency link from said at least two implantable medical devices to a routing instrument, and a secondary network link from the routing device to the central computing resource.

5. A method according to claim 4 wherein the secondary network link is a direct dial up connection.

6. A method according to claim 4 wherein the secondary network link is an area network.

7. A method according to claim 6 wherein the area network is a large area network.

8. A method according to claim 6 wherein the area network comprises a wide area network.

9. A method according to claim 6 wherein the area network comprises at least a one of an internet-, an intranet-, an extranet- or a world wide web-based network.

10. A method according to claim 4, wherein the secondary network communication link comprises an asynchronous link.

11. A method according to claim 4, wherein the secondary network communications link comprises a synchronous link.

12. A method according to claim 1, wherein each of the two or more implantable medical devices comprises one or more of: a pacemaker, a pacemaker/cardioverter/defibrillator, a defibrillator, an oxygen sensing device, a nerve stimulator, a muscle stimulator, a drug pump, a neurological stimulator, a physiological signal recorder or an implantable monitoring device.

13. A method according to claim 1, comprising the further step of: transmitting from said centralized computing resource to one or more of said implantable medical devices an upgrade to the implantable medical device firmware or software, wherein said upgrade comprises the following steps:

3/ aggregating the set of historical physiological data with an additional set of data;
performing a complex nonlinear analysis upon the aggregated sets of data to generate a predictive signal output; and
incorporating said predictive signal output into the set of instructions.

14. A computerized information network system linking at least two implantable medical devices deployed in one or more patients to a centralized external computer via a data communication network, said computerized information network comprising:

a central computing resource accessible by the data communication network, said central computing resource capable of applying a physiologic model to an aggregate set of patient data recorded by at least two implantable medical devices;
at least one routing instrument capable of wireless communication with at least one of said at least two implantable medical devices deployed in a patient, said at least one routing instrument being capable of performing a data communication sequence with the data communication network.

15. A computerized information network according to claim 14, wherein the data communication network comprises a direct link between the at least one routing instrument and the central computing resource.

3 16. A computerized information network according to claim 14, wherein the central computing resource comprises a supercomputer and the physiologic model comprises a complex nonlinear analysis algorithm.

17. A computerized information network according to claim 14, wherein the central computing resource comprises a multi-processor workstation.

18. A computerized information network according to claim 14, wherein the central computing resource comprises a networked cluster of computers.

19. A computerized information network according to claim 14, wherein the data communication protocol comprises an asynchronous protocol.

21. (NEW) A computerized method of reprogramming and/or updating operational parameters of an implantable medical device by performing mass data acquisition, data aggregation, common data analysis and providing a new instruction set to one or more implantable medical devices via a computerized network, comprising the steps of:

acquiring a historical physiologic data set stored in a data storage medium of an implantable medical device deployed in a first patient;

aggregating the data set with a plurality of other historical physiologic data sets to generate an aggregated data set;

37 performing a complex analysis of the aggregated data set to produce an output data set, wherein said output data set includes at least a one of the following:

a predictive output, an emerging trend output, a revised therapy output, a revised pacing engine output, a mass-diagnosis output, a centralized therapy output, a diagnostic output, a disease state output, a physiologic-validation output, an upgrade output, or a reprogramming output; and

communicating said output data set as an operational parameter to at least one implantable medical device.